

1 CLAIM:

- ~~1. In the method for preparing a nanocomposite by the steps of intercalating a smectite clay with a quaternary ammonium ion, and exfoliating the intercalated clay into a polymer matrix; the improvement enabling augmented exfoliation, comprising: edge treating the smectite clay with negatively charged organic molecules prior to said exfoliation.~~
- ~~2. A method in accordance with claim 1, wherein said molecules comprise a high charge density anionic polymer.~~
- ~~3. A method in accordance with claim 2, wherein said polymer is a polyacrylate.~~
- ~~4. A method in accordance with claim 3, wherein said polyacrylate is added to said clay at 0.1 to 1.0% by weight of the dry clay.~~
- ~~5. A method in accordance with claim 4, wherein said smectite clay is a montmorillonite, which is intercalated with said quaternary ammonium ion by being treated as an aqueous slurry with said ion.~~
- ~~6. A method in accordance with claim 5, wherein said edge treating is carried out prior to treatment of the clay with said quaternary ammonium ion, whereby the quaternary ammonium ion complexes with both the clay edges and the clay basal surfaces.~~
- ~~7. A method in accordance with claim 6, wherein said aqueous slurry of montmorillonite is treated with said polyacrylate and then subjected to high shear, prior to being treated with said quaternary ammonium ion.~~
- ~~8. A method in accordance with claim 7, wherein said high shear step is carried out by passing the aqueous slurry of montmorillonite through a Manton-Gaulin mill.~~

9. A method in accordance with claim 6, wherein the source of said intercalating ion is a branched chain quaternary ammonium compound.

*Method A2*